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Cosmological baryon/lepton assymmetry in terms of Kaluza-Klein extra dimensions

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We consider a new mechanism of baryon/lepton number accumulation in the early Universe in theories with compact extra dimensions. The relaxation processes in the extra space metric lead to the establishment of symmetrical extra space configuration and take place during its formation. As a result, the initial accumulation of the charges (numbers) associated with the symmetry occurs. A variant of the mechanism is discussed, based on triplet splitting in the ground (massless) Kaluza-Klein level of a fermion field. Such splitting can occur in 2-dimensional apple-like extra space with angle excess stabilized by $f(R)$-gravity. This conceptual idea can be used to develop a model for the production of the baryon/lepton number in the early Universe.

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